

FARM MACHINERY AND EQUIPMENT
1980 COST ESTIMATES

Revised and Adopted for Ohio

by

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INTRODUCTION^{1/}

The following information is included as an aid in estimating farm machinery costs for 1980. The costs are determined by formula and were updated January 1980. They represent an average cost for a specific piece of machinery. These machinery costs are intended to be average estimates for the agricultural industry.

There are two types of costs associated with owning and operating a machine. Fixed costs--which will occur whether or not the machine is used--include depreciation, interest, insurance, housing and taxes. Operating costs--which occur only when the machine is used--include fuel, lubrication, repairs and labor.

Fixed costs: Each machine is depreciated for 10 years with a salvage value of 10 percent and investment credit taken at the full 10 percent rate. It is assumed that a piece of equipment once purchased new will be used commercially for 10 years even though it may be owned by several people.

Interest and insurance are calculated by multiplying the average investment (new cost plus salvage value divided by 2) times the rates of interest and insurance. Interest and insurance rates are assumed to be 14 percent and .75 percent, respectively. Housing cost is assumed to be 33¢ per square foot of shelter space needed per year. There are no property taxes on farm machinery in Ohio.

Formulas used to compute fixed machinery costs:

Depreciation per year = $\frac{\text{purchase price} - \text{investment credit} - \text{salvage value}}{(\text{years you will use machine})}$

Interest per year = $\frac{\text{purchase price} + \text{salvage value}}{2} \times \text{interest rate}$

Insurance per year = $\frac{\text{purchase price} + \text{salvage value}}{2} \times \text{rate}$

Housing per year = price per square foot x square feet shelter space required

Taxes per year = 0 (no taxes on personal property in Ohio)

Operating costs: Fuel cost is calculated by multiplying the fuel consumption by the price of fuel. The price of fuel is assumed to be \$1.25 per gallon for diesel. All power units, tractors, combines, trucks, etc., are assumed to be diesel powered. An estimate of gasoline consumption might be made by multiplying the diesel fuel consumption by a factor of 1.36. Lubrication cost is assumed to be 10 percent of fuel cost.

The formulas for estimating the repair and maintenance costs necessary to maintain a machine in an operable condition are provided in the 1976 Agricultural Engineer's Yearbook and illustrated in the MACHINE User's Guide. The formulas can be used to estimate total accumulated repair costs according to the

^{1/} This information was developed by F. J. Benson, Agricultural Economist at the University of Minnesota.

accumulated hours of use. For a new machine, the estimate is merely one of estimating repair costs for the number of hours of intended use of the machine. The estimate is the total repair cost. This cost is divided by the total hours of use in order to provide an average repair cost per hour. An assumption is made as to the annual use of each machine. The amount of annual use is an estimate of annual hours of use that a commercial farmer would use that particular machine in one year.

Labor is assumed to be an hourly wage rate which includes benefits of \$5.20 per hour for unskilled labor and \$7 per hour for skilled labor. Labor for an operation such as plowing and discing is calculated by using the rate on the implement instead of the tractor. Plows and discs using the same tractor have different rates of work accomplishment. Less labor is charged on a discing operation which covers more acres per hour than a plowing operation.

This year, four different sizes of minimum tillage planters have been included. This reflects the current interest in minimum or reduced tillage practices in Ohio.

Tables 1 and 2 provide estimates for fixed and variable costs on an annual and hourly basis for tractors and combines of varying sizes.

Table 3 provides estimates on shelter space, repair and maintenance costs, and fuel consumption.

Tables 4 and 5 provide estimates on new costs, annual usage, rate of usage and field performance for selected items of machinery.

Table 6 provides estimates on shelter space, repair costs and labor requirements for selected items of machinery.

Tables 7 and 8 provide estimates of total function costs for the specific pieces of equipment on a per hour and per acre basis. Total function costs are estimates of all the costs associated with doing a specific function such as plowing, discing, spraying, etc. Total function costs include overhead and operating costs of the tractor (if used) and the piece of equipment, plus the cost of labor to operate the equipment.

Table 9 provides estimates of fuel consumption per acre based on .06 gallons of diesel fuel per horsepower hour. Fuel price is included at \$1.25 per gallon.

Tables 10 and 11 include estimates of suggested custom rates on a per hour and per acre basis. These suggested custom rates include all costs plus a 20 percent addition to cover risks and provide a reasonable profit. Some pieces of equipment are assumed to be used over more acres when used by a custom operator so that the annual overhead may be spread over more hours or acres than would be the case for the average farm operator. This indicates somewhat lower costs because of reduced per unit overhead as compared to the commercial operator. Table 11 includes estimates of cash operating costs, total function costs and suggested custom rates for each piece of equipment. The cash operating costs (out of pocket costs) include fuel, oil, repairs and maintenance for each set of equipment. Labor is not included in the cash operating costs but is included in the total function costs and suggested custom rates. The labor wage rate for unskilled labor is \$5.20 per hour and a charge of \$7 per hour is used for skilled labor (see table 6).

Total machinery function costs for 1980 have increased 25 to 35 percent over 1979. The following table compares the machinery function costs per acre for four selected items from 1978 to 1980.

Machine function	1978	1979	1980
plow 6 - 16	\$ 6.41	\$ 7.72	\$10.89
corn planter 6 - 30	5.51	6.52	8.20
combine small grain	8.13	10.78	14.54
combine corn 6 - 30	13.09	17.46	22.73
increase over last year		28%	32.6%

These per acre costs have increased sharply (32.6 percent) primarily for three reasons: (1) Based on a survey of five agricultural machinery manufacturers, the purchase price of farm equipment included in this study increased 8 to 10 percent from 1979. (2) Interest rates have increased to 14 percent this year, as compared to 11 percent for 1979. (3) Diesel fuel prices have increased dramatically over 1979. This year's estimate of \$1.25 per gallon is really 2.5 times higher than the 1979 estimate of 51¢ per gallon. These three increases in the costs of owning and operating farm equipment have caused expected 1980 machinery function costs to increase 25 to 35 percent over 1979.

These cost estimates are not intended to be indicative of everyone's cost, but are intended to be used as a guide in planning the cropping operation. Each individual has unique costs because of his buying power, repair program, average annual use and overall replacement program.

TABLE 1

ESTIMATED NEW COST, AVERAGE INVESTMENT, ANNUAL HOURS USE, ANNUAL FIXED COST,
AND RESULTING FIXED COST PER HOUR FOR SPECIFIED SIZES OF TRACTORS.

TRACTOR	HP	NEW COST	AVERAGE INVESTMENT	ANNUAL HOURS USE	ANNUAL FIXED COST	FIXED COST/HR
40	HP	10640.00	5852.00	500.00	1744.73	3.49
60	HP	15040.00	8272.00	500.00	2457.64	4.92
75	HP	18710.00	10290.50	500.00	3052.60	6.11
100	HP	27270.00	14998.50	550.00	4435.79	8.07
120	HP	33970.00	18683.50	550.00	5516.32	10.03
140	HP	36780.00	20229.00	550.00	5992.18	10.89
160	HP	40000.00	22000.00	600.00	6511.00	10.85
180	HP	54600.00	30030.00	600.00	8863.42	14.77
225	HP 4WD	56100.00	30855.00	500.00	9121.61	18.24
250	HP 4WD	66340.00	36487.00	500.00	10771.53	21.54
275	HP 4WD	66060.00	36333.00	500.00	10726.42	21.45
300	HP 4WD	71660.00	39413.00	500.00	11628.72	23.26
320	HP 4WD	77000.00	42350.00	500.00	12489.13	24.98
350	HP 4WD	76730.00	42201.50	500.00	12445.62	24.89
SML	COMBINE*	35220.00	19371.00	300.00	5773.82	19.25
MED	COMBINE*	52130.00	28671.50	300.00	8531.45	28.44
LRG	COMBINE*	60310.00	33170.50	300.00	9882.45	32.94

TABLE 2

ESTIMATED HOURLY AND ANNUAL COSTS CALCULATED FOR
EXPECTED HOURS OF USE FOR SPECIFIED SIZES OF TRACTORS.

TRACTOR	HP	VARIABLE COST/HR	ANNUAL VARIABLE COST	ANNUAL TOTAL COST	TOTAL COST/ HOUR
40	HP	3.99	1993.40	3738.13	7.48
60	HP	5.92	2960.41	5418.05	10.84
75	HP	7.40	3697.61	6750.21	13.50
100	HP	10.10	5552.90	9988.69	18.16
120	HP	12.20	6709.88	12226.20	22.23
140	HP	14.04	7722.01	13714.19	24.93
160	HP	16.03	9617.06	16128.06	26.88
180	HP	18.71	11226.48	20089.91	33.48
225	HP 4WD	21.58	10790.10	19911.71	39.82
250	HP 4WD	24.19	12096.76	22868.29	45.74
275	HP 4WD	26.24	13120.48	23846.90	47.69
300	HP 4WD	28.60	14302.35	25931.06	51.86
320	HP 4WD	30.54	15270.97	27760.10	55.52
350	HP 4WD	33.00	16501.21	28946.83	57.89
SML	COMBINE*	20.79	6238.47	12012.29	40.84
MED	COMBINE*	27.64	8292.90	16824.35	56.08
LRG	COMBINE*	32.04	9612.49	19494.94	64.98

TABLE 3

ESTIMATED SHELTER SPACE REQUIREMENT, REPAIR AND MAINTENANCE COST/HR,
AND FUEL CONSUMPTION FOR SPECIFIED SIZES OF TRACTORS.

TRACTOR	HP	SHELTER SPACE (SQ. FT)	REPAIR + MAINT. COST/HR	FUEL CONS./ HOUR
40	HP	92.00	.69	2.400
60	HP	104.00	.97	3.600
75	HP	115.00	1.21	4.500
100	HP	127.00	1.85	6.000
120	HP	130.00	2.30	7.200
140	HP	200.00	2.49	8.400
160	HP	200.00	2.83	9.600
180	HP	200.00	3.86	10.800
225	HP 4WD	250.00	3.02	13.500
250	HP 4WD	250.00	3.57	15.000
275	HP 4WD	250.00	3.55	16.500
300	HP 4WD	250.00	3.85	18.000
320	HP 4WD	250.00	4.14	19.200
350	HP 4WD	250.00	4.13	21.000
SML	COMBINE*	300.00	12.54	6.000
MED	COMBINE*	400.00	18.57	6.600
LRG	COMBINE*	500.00	21.48	7.680

* Combine without header.

TABLE 4

ESTIMATED PRICES, ANNUAL USE, AND MACHINE TIME FOR SELECTED ITEMS OF MACHINERY

MACHINE	NEW COST	AVERAGE INVESTMENT	ANNUAL HOURS USE	ANNUAL ACRES USE	ESTIMATED ACRES/HR
PLOW 2-16	1130.00	621.50	120.00	139.29	1.16
PLOW 3-16	2170.00	1193.50	120.00	209.45	1.75
PLOW 4-16	3400.00	1870.00	120.00	279.10	2.33
PLOW 5-16	5290.00	2909.50	120.00	348.74	2.91
PLOW 6-16	6210.00	3415.50	130.00	453.82	3.49
PLOW 7-16	7980.00	4389.00	130.00	529.27	4.07
PLOW 8-16	8650.00	4757.50	130.00	604.71	4.65
PLOW 9-18	13440.00	7392.00	150.00	883.64	5.89
PLOW 10-18	13850.00	7617.50	150.00	981.82	6.55
PLOW 12-18	15370.00	8453.50	150.00	1178.18	7.85
CHISEL PLOW 15 FT	2960.00	1628.00	100.00	654.55	6.55
CHISEL PLOW 17 FT	4700.00	2585.00	100.00	741.82	7.42
CHISEL PLOW 20 FT	6140.00	3377.00	100.00	872.73	8.73
CHISEL PLOW WING 24	6780.00	3729.00	100.00	1047.27	10.47
CHISEL PLOW WING 29	8170.00	4493.50	100.00	1265.45	12.65
CHISEL PLOW WING 35	8330.00	4581.50	100.00	1527.27	15.27
FIELD CULTIVATOR 18	2880.00	1584.00	120.00	1047.27	8.73
FIELD CULTIVATOR 28	5740.00	3157.00	120.00	1629.09	13.58
FIELD CULTIVATOR 37	7600.00	4180.00	120.00	2152.73	17.94
MIN-TIL PLANTER 4-38	7790.00	4284.50	60.00	225.58	3.76
MIN-TIL PLANTER 6-38	12160.00	6688.00	60.00	338.55	5.64
MIN-TIL PLANTER 6-30	11200.00	6160.00	60.00	267.27	4.45
MIN-TIL PLANTER 8-30	14030.00	7716.50	60.00	356.36	5.94
DISK 10 FT	2350.00	1292.50	100.00	484.85	4.85
DISK 16 FT	5140.00	2827.00	100.00	775.76	7.76
DISK 17 FT	6320.00	3476.00	100.00	824.24	8.24
DISK 20 FT	6400.00	3520.00	100.00	969.70	9.70
DISK 21 FT	7120.00	3916.00	100.00	1018.18	10.18
DISK 24 FT	9680.00	5324.00	100.00	1163.64	11.64

TABLE 4, CONTINUED

ESTIMATED PRICES, ANNUAL USE, AND MACHINE TIME FOR SELECTED ITEMS OF MACHINERY

MACHINE	NEW COST	AVERAGE INVESTMENT	ANNUAL HOURS USE	ANNUAL ACRES USE	ESTIMATED ACRES/HR
DISK 28 FT	11270.00	6198.50	100.00	1357.58	13.58
DISK 32 FT	12350.00	6792.50	100.00	1551.52	15.52
DISK OFFSET 14 FT	5760.00	3168.00	100.00	610.91	6.11
DISK OFFSET 16 FT	6990.00	3844.50	100.00	698.18	6.98
DISK OFFSET 18 FT	7680.00	4224.00	100.00	785.45	7.85
DISK-WING OFFSET 21	9110.00	5010.50	100.00	916.36	9.16
DISK-WING OFFSET 23	11400.00	6270.00	100.00	1003.64	10.04
LANDPLANE 45-12FT	5970.00	3283.50	75.00	480.00	6.40
LANDPLANE 54-12FT	9800.00	5390.00	75.00	480.00	6.40
LANDPLANE 54-15FT	10120.00	5566.00	75.00	600.00	8.00
LANDPLANE 75-14FT	10750.00	5912.50	75.00	560.00	7.47
SPRINGTOOTH DRAG 30	2940.00	1617.00	30.00	480.00	16.00
SPRINGTOOTH DRAG 48	5300.00	2915.00	35.00	1058.91	30.25
FERTILIZER SPRDR 40	3700.00	2035.00	30.00	1163.64	38.79
CORN PLANTER 4-38	5730.00	3151.50	60.00	290.03	4.83
CORN PLANTER 6-38	8760.00	4818.00	60.00	435.27	7.25
CORN PLANTER 6-30	8150.00	4482.50	60.00	343.64	5.73
CORN PLANTER 8-30	10300.00	5665.00	60.00	458.18	7.64
POTATO PLANTER 4 ROW	13500.00	7425.00	65.00	248.97	3.83
BEET PLANTER 12ROW	12640.00	6952.00	60.00	280.00	4.67
GRAIN DRILL PW 14 FT	7800.00	4290.00	80.00	445.96	5.57
GRAIN DRILL PW 16 FT	10680.00	5874.00	80.00	509.67	6.37
GRAIN DRILL PW 20 FT	12550.00	6902.50	80.00	637.09	7.96
GRAIN DRILL PW 24 FT	14260.00	7843.00	80.00	764.51	9.56
GRAIN DRILL PW 28 FT	16000.00	8800.00	80.00	891.93	11.15
CULTIVATOR 4-38	1910.00	1050.50	100.00	491.05	4.91
CULTIVATOR 6-38	2910.00	1600.50	100.00	736.97	7.37
CULTIVATOR 6-30	2170.00	1193.50	100.00	581.82	5.82
CULTIVATOR 8-30	3040.00	1672.00	100.00	775.76	7.76

TABLE 4, CONTINUED

ESTIMATED PRICES, ANNUAL USE, AND MACHINE TIME FOR SELECTED ITEMS OF MACHINERY

MACHINE	NEW COST	AVERAGE INVESTMENT	ANNUAL HOURS USE	ANNUAL ACRES USE	ESTIMATED ACRES/HR
ROTARY HOE 16	2400.00	1320.00	40.00	434.42	10.86
POTATO CULT. 4 ROW	3350.00	1842.50	130.00	796.70	6.13
BEET CULT. 12 ROW	5050.00	2777.50	60.00	360.00	6.00
BEET THINNER 6 ROW	12110.00	6660.50	100.00	210.00	2.10
BEET THINNER 12 ROW	23230.00	12776.50	100.00	420.00	4.20
SPRAYER 30FT	2100.00	1155.00	80.00	1134.55	14.18
SPRAYER 50FT	3470.00	1908.50	100.00	2363.64	23.64
SPRAYER HI PRES 50FT	10850.00	5967.50	100.00	2363.64	23.64
ANHYDROUS APPLICATOR	3870.00	2128.50	40.00	356.36	8.91
SHREDDER 12FT	4110.00	2260.50	100.00	436.36	4.36
SWATHER-COND. 12FT	15990.00	8794.50	80.00	436.36	5.45
SWATHER-COND. 15FT	16050.00	8827.50	80.00	545.45	6.82
SWATHER 12 FT	14640.00	8052.00	80.00	465.45	5.82
SWATHER 15 FT	14700.00	8085.00	80.00	581.82	7.27
SWATHER 18 FT	14970.00	8233.50	80.00	698.18	8.73
SWATHER 20 FT	16660.00	9163.00	80.00	775.76	9.70
1. TON STACKER	8490.00	4669.50	200.00	829.09	4.15
3 TON STACKER	13260.00	7293.00	220.00	1064.00	4.84
6 TON STACKER	18340.00	10087.00	280.00	1547.64	5.53
BALER PTO TWINE	6650.00	3657.50	200.00	756.36	3.78
ROUND BALER	8640.00	4752.00	200.00	927.27	4.64
ROTARY MOWER	1670.00	918.50	100.00	272.73	2.73
RAKE (HYD)	1910.00	1050.50	200.00	698.18	3.49
FORAGE HARV. 1 ROW	9420.00	5181.00	100.00	94.55	.95
FORAGE HARV. 2 ROW	11070.00	6088.50	100.00	165.45	1.65
FOR HARV 2ROW SP	49770.00	27373.50	150.00	305.45	2.04
FOR HAR 3ROW SP	51390.00	28264.50	150.00	458.18	3.05
FORAGE BLOWER LG	2030.00	1116.50	50.00		

TABLE 4, CONTINUED

ESTIMATED PRICES, ANNUAL USE, AND MACHINE TIME FOR SELECTED ITEMS OF MACHINERY

MACHINE	NEW COST	AVERAGE INVESTMENT	ANNUAL HOURS USE	ANNUAL ACRES USE	ESTIMATED ACRES/HR
CORN PICKER 2-38	10200.00	5610.00	150.00	223.36	1.49
PICKER-SHELLER 2-ROW	11560.00	6358.00	150.00	223.36	1.49
COMBINE SM GRAIN SML	3890.00	2139.50	200.00	819.39	4.10
COMBINE SM GRAIN MED	4310.00	2370.50	200.00	945.45	4.73
COMBINE SM GRAIN LGE	4990.00	2744.50	200.00	1260.61	6.30
COMBINE SOYBEANS SML	5160.00	2838.00	200.00	716.97	3.58
COMBINE SOYBEANS MED	5880.00	3234.00	200.00	827.27	4.14
COMBINE SOYBEANS LGE	7530.00	4141.50	200.00	992.73	4.96
COMBINE CORN 2-38 SM	4210.00	2315.50	200.00	297.82	1.49
COMBINE CORN 3-38 SM	6820.00	3751.00	200.00	449.09	2.25
COMBINE CORN 4-38 MD	9180.00	5049.00	200.00	598.47	2.99
COMBINE CORN 4-30 MD	8760.00	4818.00	200.00	520.00	2.60
COMBINE CORN 6-30 LG	12000.00	6600.00	200.00	780.00	3.90
COMBINE CORN 8-30 LG	15730.00	8651.50	200.00	945.45	4.73
POTATO HRVSTR. 2ROW	22000.00	12100.00	120.00	298.76	2.49
BEET LIFTER 3 ROW	14700.00	8085.00	80.00	208.00	2.50
BEET LIFTER 4 ROW	18000.00	9900.00	80.00	277.21	3.47
BEET LIFTER 6 ROW	27100.00	14905.00	80.00	416.00	5.20
BEET TOPPER 3 ROW	6900.00	3795.00	80.00	256.00	3.20
BEET TOPPER 4 ROW	8740.00	4807.00	80.00	341.18	4.26
BEET TOPPER 6 ROW	9400.00	5170.00	80.00	512.00	6.40
BEET WAGON 8TON	6100.00	3355.00	80.00		
LIGHT TRUCK	9350.00	5142.50	400.00		
MEDIUM TRUCK	15500.00	8525.00	400.00		
HEAVY TRUCK	24450.00	13447.50	400.00		
WAGON	1980.00	1089.00	250.00		
FORAGE WAGON 14FT	5100.00	2805.00	130.00		
FORAGE WAGON 16FT	5460.00	3003.00	130.00		

TABLE 5

ESTIMATED FIELD PERFORMANCE FOR SELECTED ITEMS OF MACHINERY

MACHINE	SPEED (MPH)	FIELD EFFICIENCY	WIDTH (FEET)	ACRES/ HOUR	HOURS/ ACRE
PLOW 2-16	4.50	.80	2.66	1.16	.862
PLOW 3-16	4.50	.80	4.00	1.75	.573
PLOW 4-16	4.50	.80	5.33	2.33	.430
PLOW 5-16	4.50	.80	6.66	2.91	.344
PLOW 6-16	4.50	.80	8.00	3.49	.286
PLOW 7-16	4.50	.80	9.33	4.07	.246
PLOW 8-16	4.50	.80	10.66	4.65	.215
PLOW 9-18	4.50	.80	13.50	5.89	.170
PLOW 10-18	4.50	.80	15.00	6.55	.153
PLOW 12-18	4.50	.80	18.00	7.85	.127
CHISEL PLOW 15 FT	4.50	.80	15.00	6.55	.153
CHISEL PLOW 17 FT	4.50	.80	17.00	7.42	.135
CHISEL PLOW 20 FT	4.50	.80	20.00	8.73	.115
CHISEL PLOW WING 24	4.50	.80	24.00	10.47	.095
CHISEL PLOW WING 29	4.50	.80	29.00	12.65	.079
CHISEL PLOW WING 35	4.50	.80	35.00	15.27	.065
FIELD CULTIVATOR 18	5.00	.80	18.00	8.73	.115
FIELD CULTIVATOR 28	5.00	.80	28.00	13.58	.074
FIELD CULTIVATOR 37	5.00	.80	37.00	17.94	.056
MIN-TIL PLANTER 4-38	3.50	.70	12.66	3.76	.266
MIN-TIL PLANTER 6-38	3.50	.70	19.00	5.64	.177
MIN-TIL PLANTER 6-30	3.50	.70	15.00	4.45	.224
MIN-TIL PLANTER 8-30	3.50	.70	20.00	5.94	.168
DISK 10 FT	5.00	.80	10.00	4.85	.206
DISK 16 FT	5.00	.80	16.00	7.76	.129
DISK 17 FT	5.00	.80	17.00	8.24	.121

TABLE 5, CONTINUED

ESTIMATED FIELD PERFORMANCE FOR SELECTED ITEMS OF MACHINERY

MACHINE	SPEED (MPH)	FIELD EFFICIENCY	WIDTH (FEET)	ACRES/ HOUR	HOURS/ ACRE
DISK 20 FT	5.00	.80	20.00	9.70	.103
DISK 21 FT	5.00	.80	21.00	10.18	.098
DISK 24 FT	5.00	.80	24.00	11.64	.086
DISK 28 FT	5.00	.80	28.00	13.58	.074
DISK 32 FT	5.00	.80	32.00	15.52	.064
DISK OFFSET 14 FT	4.50	.80	14.00	6.11	.164
DISK OFFSET 16 FT	4.50	.80	16.00	6.98	.143
DISK OFFSET 18 FT	4.50	.80	18.00	7.85	.127
DISK-WING OFFSET 21	4.50	.80	21.00	9.16	.109
DISK-WING OFFSET 23	4.50	.80	23.00	10.04	.100
LANDPLANE 45-12FT	5.50	.80	12.00	6.40	.156
LANDPLANE 54-12FT	5.50	.80	12.00	6.40	.156
LANDPLANE 54-15FT	5.50	.80	15.00	8.00	.125
LANDPLANE 75-14FT	5.50	.80	14.00	7.47	.134
SPRINGTOOTH DRAG 30	5.50	.80	30.00	16.00	.063
SPRINGTOOTH DRAG 48	6.50	.80	48.00	30.25	.033
FERTILIZER SPRDR 40	10.00	.80	40.00	38.79	.026
CORN PLANTER 4-38	4.50	.70	12.66	4.83	.207
CORN PLANTER 6-38	4.50	.70	19.00	7.25	.138
CORN PLANTER 6-30	4.50	.70	15.00	5.73	.175
CORN PLANTER 8-30	4.50	.70	20.00	7.64	.131
POTATO PLANTER 4 ROW	5.00	.50	12.64	3.83	.261
BEEF PLANTER 12ROW	2.50	.70	22.00	4.67	.214
GRAIN DRILL PW 14 FT	4.50	.73	14.00	5.57	.179
GRAIN DRILL PW 16 FT	4.50	.73	16.00	6.37	.157
GRAIN DRILL PW 20 FT	4.50	.73	20.00	7.96	.126

TABLE 5, CONTINUED

ESTIMATED FIELD PERFORMANCE FOR SELECTED ITEMS OF MACHINERY

MACHINE	SPEED (MPH)	FIELD EFFICIENCY	WIDTH (FEET)	ACRES/ HOUR	HOURS/ ACRE
GRAIN DRILL PW 24 FT	4.50	.73	24.00	9.56	.105
GRAIN DRILL PW 28 FT	4.50	.73	28.00	11.15	.090
CULTIVATOR 4-38	4.00	.80	12.66	4.91	.204
CULTIVATOR 6-38	4.00	.80	19.00	7.37	.136
CULTIVATOR 6-30	4.00	.80	15.00	5.82	.172
CULTIVATOR 8-30	4.00	.80	20.00	7.76	.129
ROTARY HOE 16	7.00	.80	16.00	10.86	.092
POTATO CULT. 4 ROW	5.00	.80	12.64	6.13	.163
BET CULT. 12 ROW	3.00	.75	22.00	6.00	.167
BET THINNER 6 ROW	2.25	.70	11.00	2.10	.476
BET THINNER 12 ROW	2.25	.70	22.00	4.20	.238
SPRAYER 30FT	6.50	.60	30.00	14.18	.071
SPRAYER 50FT	6.50	.60	50.00	23.64	.042
SPRAYER HI PRES 50FT	6.50	.60	50.00	23.64	.042
ANHYDROUS APPLICATOR	5.00	.70	21.00	8.91	.112
SHREDDER 12FT	4.00	.75	12.00	4.36	.229
SWATHER-COND. 12FT	5.00	.75	12.00	5.45	.183
SWATHER-COND. 15FT	5.00	.75	15.00	6.82	.147
SWATHER 12 FT	5.00	.80	12.00	5.82	.172
SWATHER 15 FT	5.00	.80	15.00	7.27	.138
SWATHER 18 FT	5.00	.80	18.00	8.73	.115
SWATHER 20 FT	5.00	.80	20.00	9.70	.103
1 TON STACKER	4.75	.60	12.00	4.15	.241
3 TON STACKER	4.75	.70	12.00	4.84	.207
6 TON STACKER	4.75	.80	12.00	5.53	.181
BALER PTO TWINE	4.00	.65	12.00	3.78	.264

TABLE 5, CONTINUED
ESTIMATED FIELD PERFORMANCE FOR SELECTED ITEMS OF MACHINERY

MACHINE	SPEED (MPH)	FIELD EFFICIENCY	WIDTH (FEET)	ACRES/ HOUR	HOURS/ ACRE
ROUND BALER	4.25	.75	12.00	4.64	.216
ROTARY MOWER	5.00	.75	6.00	2.73	.367
RAKE (HYD)	4.00	.80	9.00	3.49	.286
FORAGE HARV. 1 ROW	4.00	.65	3.00	.95	1.058
FORAGE HARV. 2 ROW	3.50	.65	6.00	1.65	.604
FOR HARV 2ROW SP	4.00	.70	6.00	2.04	.491
FOR HAR 3ROW SP	4.00	.70	9.00	3.05	.327
FORAGE BLOWER LG					
CORN PICKER 2-38	3.00	.65	6.30	1.49	.672
PICKER-SHELLER 2-ROW	3.00	.65	6.30	1.49	.672
COMBINE SM GRAIN SML	4.00	.65	13.00	4.10	.244
COMBINE SM GRAIN MED	4.00	.65	15.00	4.73	.212
COMBINE SM GRAIN LGE	4.00	.65	20.00	6.30	.159
COMBINE SOYBEANS SML	3.50	.65	13.00	3.58	.279
COMBINE SOYBEANS MED	3.50	.65	15.00	4.14	.242
COMBINE SOYBEANS LGE	3.50	.65	18.00	4.96	.201
COMBINE CORN 2-38 SM	3.00	.65	6.30	1.49	.672
COMBINE CORN 3-38 SM	3.00	.65	9.50	2.25	.445
COMBINE CORN 4-38 MD	3.00	.65	12.66	2.99	.334
COMBINE CORN 4-30 MD	3.30	.65	10.00	2.60	.385
COMBINE CORN 6-30 LG	3.30	.65	15.00	3.90	.256
COMBINE CORN 8-30 LG	3.00	.65	20.00	4.73	.212
POTATO HRVSTR. 2ROW	5.00	.65	6.32	2.49	.402
BEET LIFTER 3 ROW	6.00	.65	5.50	2.60	.385
BEET LIFTER 4 ROW	6.00	.65	7.33	3.47	.289
BEET LIFTER 6 ROW	6.00	.65	11.00	5.20	.192
BEET TOPPER 3 ROW	6.00	.80	5.50	3.20	.313
BEET TOPPER 4 ROW	6.00	.80	7.33	4.26	.234
BEET TOPPER 6 ROW	6.00	.80	11.00	6.40	.156
BEET WAGON 8TON	6.00	.65	7.33		
LIGHT TRUCK	5.00	.50	5.00		
MEDIUM TRUCK	5.00	.50	5.00		
HEAVY TRUCK	5.00	.50	5.00		
WAGON	4.00	.65	12.00		
FORAGE WAGON 14FT	3.50	.65	6.00		
FORAGE WAGON 15FT	3.50	.65	6.00		

TABLE 6

ESTIMATED SHELTER SPACE REQUIREMENTS, REPAIR AND MAINTENANCE COST/HR, LABOR REQUIREMENTS BY CATEGORY, AND TOTAL LABOR COST FOR SPECIFIED ITEMS OF MACHINERY (COST OF TRACTOR OPERATOR IS CHARGED TO THE MACHINE BEING OPERATED).

MACHINE	SHELTER SPACE (SQ. FT.)	REPAIR + MAINT. COST/HR	LABOR REQUIREMENTS		MAN HRS AS PCT. MACH. HOURS	LABOR COST/ MACHINE HOUR
			SKILLED AT \$7.00	UNSKILLED AT \$5.20		
PLOW 2-16	29.00	.43	0	1.	102.	5.30
PLOW 3-16	52.00	.83	0	1.	102.	5.30
PLOW 4-16	75.00	1.31	0	1.	102.	5.30
PLOW 5-16	104.00	2.03	0	1.	102.	5.30
PLOW 6-16	132.00	2.45	0	1.	102.	5.30
PLOW 7-16	141.00	3.14	0	1.	102.	5.30
PLOW 8-16	150.00	3.41	0	1.	102.	5.30
PLOW 9-18	160.00	5.53	0	1.	102.	5.30
PLOW 10-18	170.00	5.70	0	1.	102.	5.30
PLOW 12-18	210.00	6.32	0	1.	102.	5.30
CHISEL PLOW 15 FT	225.00	1.08	0	1.	102.	5.30
CHISEL PLOW 17 FT	255.00	1.71	0	1.	102.	5.30
CHISEL PLOW 20 FT	300.00	2.24	0	1.	102.	5.30
CHISEL PLOW WING 24	190.00	2.47	0	1.	102.	5.30
CHISEL PLOW WING 29	200.00	2.97	0	1.	102.	5.30
CHISEL PLOW WING 35	200.00	3.03	0	1.	102.	5.30
FIELD CULTIVATOR 18	200.00	1.11	0	1.	102.	5.30
FIELD CULTIVATOR 28	200.00	2.21	0	1.	102.	5.30
FIELD CULTIVATOR 37	200.00	2.92	0	1.	102.	5.30
MIN-TIL PLANTER 4-38	150.00	4.94	1.	0	116.	8.12
MIN-TIL PLANTER 6-38	180.00	7.70	1.	0	116.	8.12
MIN-TIL PLANTER 6-30	170.00	7.10	1.	0	116.	8.12
MIN-TIL PLANTER 8-30	200.00	8.89	1.	0	116.	8.12
DISK 10 FT	115.00	.86	0	1.	102.	5.30
DISK 16 FT	185.00	1.87	0	1.	102.	5.30
DISK 17 FT	150.00	2.30	0	1.	102.	5.30

TABLE 6, CONTINUED

ESTIMATED SHELTER SPACE REQUIREMENTS, REPAIR AND MAINTENANCE COST/HR, LABOR REQUIREMENTS BY CATEGORY, AND TOTAL LABOR COST FOR SPECIFIED ITEMS OF MACHINERY (COST OF TRACTOR OPERATOR IS CHARGED TO THE MACHINE BEING OPERATED).

MACHINE	SHELTER SPACE (SQ. FT.)	REPAIR + MAINT. COST/HR	LABOR REQUIREMENTS		MAN HRS AS PCT. MACH. HOURS	LABOR COST/ MACHINE HOUR
			SKILLED AT \$7.00	UNSKILLED AT \$5.20		
DISK 20 FT	230.00	2.33	0	1.	102.	5.30
DISK 21 FT	200.00	2.59	0	1.	102.	5.30
DISK 24 FT	200.00	3.52	0	1.	102.	5.30
DISK 28 FT	210.00	4.10	0	1.	102.	5.30
DISK 32 FT	210.00	4.50	0	1.	102.	5.30
DISK OFFSET 14 FT	210.00	2.10	0	1.	102.	5.30
DISK OFFSET 16 FT	240.00	2.55	0	1.	102.	5.30
DISK OFFSET 18 FT	270.00	2.80	0	1.	102.	5.30
DISK-WING OFFSET 21	220.00	3.32	0	1.	102.	5.30
DISK-WING OFFSET 23	220.00	4.15	0	1.	102.	5.30
LANDPLANE 45-12FT	540.00	.89	0	1.	108.	5.62
LANDPLANE 54-12FT	650.00	1.47	0	1.	108.	5.62
LANDPLANE 54-15FT	810.00	1.51	0	1.	108.	5.62
LANDPLANE 75-14FT	980.00	1.61	0	1.	108.	5.62
SPRINGTOOTH DRAG 30	50.00	.75	0	1.	108.	5.62
SPRINGTOOTH DRAG 48	180.00	1.41	0	1.	108.	5.62
FERTILIZER SPRDR 40	80.00	.94	0	1.	133.	6.92
CORN PLANTER 4-30	150.00	3.63	1.	0	116.	8.12
CORN PLANTER 6-38	180.00	5.55	1.	0	116.	8.12
CORN PLANTER 6-30	170.00	5.16	1.	0	116.	8.12
CORN PLANTER 8-30	200.00	6.53	1.	0	116.	8.12
POTATO PLANTER 4 ROW	54.00	8.83	1.	1.	124.	15.13
BEET PLANTER 12ROW	150.00	8.01	1.	0	124.	8.68
GRAIN DRILL PW 14 FT	130.00	5.54	1.	0	111.	7.77
GRAIN DRILL PW 16 FT	150.00	7.59	1.	0	111.	7.77
GRAIN DRILL PW 20 FT	185.00	8.92	1.	0	111.	7.77

TABLE 6, CONTINUED

ESTIMATED SHELTER SPACE REQUIREMENTS, REPAIR AND MAINTENANCE
COST/HR, LABOR REQUIREMENTS BY CATEGORY, AND TOTAL LABOR COST
FOR SPECIFIED ITEMS OF MACHINERY (COST OF TRACTOR OPERATOR
IS CHARGED TO THE MACHINE BEING OPERATED).

MACHINE	SHELTER SPACE (SQ. FT.)	REPAIR + MAINT. COST/HR	LABOR REQUIREMENTS		MAN HRS AS PCT. MACH. HOURS	LABOR COST/ MACHINE HOUR
			SKILLED AT \$7.00	UNSKILLED AT \$5.20		
GRAIN DRILL PW 24 FT	220.00	10.14	1.	0	111.	7.77
GRAIN DRILL PW 28 FT	260.00	11.37	1.	0	111.	7.77
CULTIVATOR 4-38	85.00	.70	0	1.	104.	5.41
CULTIVATOR 6-38	125.00	1.06	0	1.	104.	5.41
CULTIVATOR 6-30	100.00	.79	0	1.	104.	5.41
CULTIVATOR 8-30	140.00	1.11	0	1.	104.	5.41
ROTARY HOE 16	130.00	.66	0	1.	100.	5.20
POTATO CULT. 4 ROW	28.00	1.32	0	1.	104.	5.41
BEET CULT. 12 ROW	150.00	1.58	0	1.	104.	5.41
BEET THINNER 6 ROW	150.00	4.41	1.	0	104.	7.28
BEET THINNER 12 ROW	150.00	8.46	1.	0	104.	7.28
SPRAYER 30FT	150.00	1.49	1.	0	125.	8.75
SPRAYER 50FT	200.00	2.70	1.	0	125.	8.75
SPRAYER HI PRES 50FT	200.00	8.43	1.	0	125.	8.75
ANHYDROUS APPLICATOR	145.00	2.50	0	1.	133.	6.92
SHREDDER 12FT	90.00	.94	0	1.	100.	5.20
SWATHER-COND. 12FT	205.00	4.07	0	1.	100.	5.20
SWATHER-COND. 15FT	260.00	4.08	0	1.	100.	5.20
SWATHER 12 FT	205.00	3.72	0	1.	100.	5.20
SWATHER 15 FT	260.00	3.74	0	1.	100.	5.20
SWATHER 18 FT	310.00	3.81	0	1.	100.	5.20
SWATHER 20 FT	345.00	4.24	0	1.	100.	5.20
1 TON STACKER	155.00	3.40	1.	0	111.	7.77
3 TON STACKER	207.00	5.52	1.	0	111.	7.77
6 TON STACKER	300.00	8.41	1.	0	111.	7.77
BALER PTO TWINE	184.00	1.95	1.	0	111.	7.77

TABLE 6, CONTINUED

ESTIMATED SHELTER SPACE REQUIREMENTS, REPAIR AND MAINTENANCE
COST/HR, LABOR REQUIREMENTS BY DATE, DRY, AND TOTAL LABOR COST
FOR SPECIFIED ITEMS OF MACHINERY (COST OF TRACTOR OPERATOR
IS CHARGED TO THE MACHINE BEING OPERATED).

MACHINE	SHELTER SPACE (SQ. FT.)	REPAIR + MAINT. COST/HR	LABOR REQUIREMENTS		MAN HRS AS PCT. MACH. HOURS	LABOR COST/ MACHINE HOUR
			SKILLED AT \$7.00	UNSKILLED AT \$5.20		
ROUND BALER	115.00	2.53	0	1.	111.	5.77
ROTARY MOWER	57.00	.81	0	1.	100.	5.20
RAKE (HYD)	115.00	.70	0	1.	100.	5.20
FORAGE HARV. 1 ROW	104.00	2.86	1.	0	111.	7.77
FORAGE HARV. 2 ROW	140.00	3.36	1.	0	111.	7.77
FOR HARV 2ROW SP	230.00	13.43	1.	0	111.	7.77
FOR HAR 3ROW SP	300.00	13.87	1.	0	111.	7.77
FORAGE BLOWER LG	30.00	.47	0	1.	100.	5.20
CORN PICKER 2-38	140.00	3.64	1.	0	111.	7.77
PICKER-SHELLER 2-ROW	140.00	4.13	1.	0	111.	7.77
COMBINE SM GRAIN SML	60.00	1.18	1.	0	111.	7.77
COMBINE SM GRAIN MED	78.00	1.31	1.	0	111.	7.77
COMBINE SM GRAIN LGE	90.00	1.51	1.	0	111.	7.77
COMBINE SOYBEANS SML	78.00	1.56	1.	0	111.	7.77
COMBINE SOYBEANS MED	78.00	1.78	1.	0	111.	7.77
COMBINE SOYBEANS LGE	108.00	2.28	1.	0	111.	7.77
COMBINE CORN 2-38 SM	64.00	2.11	1.	0	111.	7.77
COMBINE CORN 3-38 SM	76.00	3.42	1.	0	111.	7.77
COMBINE CORN 4-38 MD	101.00	4.60	1.	0	111.	7.77
COMBINE CORN 4-30 MD	80.00	4.39	1.	0	111.	7.77
COMBINE CORN 6-30 LG	120.00	6.02	1.	0	111.	7.77
COMBINE CORN 8-30 LG	160.00	7.89	1.	0	111.	7.77
POTATO HRVSTR. 2ROW	180.00	5.26	1.	2.	111.	19.31
BEEF LIFTER 3 ROW	65.00	2.99	1.	0	111.	7.77
BEEF LIFTER 4 ROW	95.00	3.66	1.	0	111.	7.77
BEEF LIFTER 6 ROW	140.00	5.51	1.	0	111.	7.77
BEEF TOPPER 3 ROW	65.00	1.92	1.	0	100.	7.00
BEEF TOPPER 4 ROW	95.00	2.43	1.	0	100.	7.00
BEEF TOPPER 6 ROW	140.00	2.61	1.	0	100.	7.00
BELT WAGON 8TON	175.00	.59	0	1.	100.	5.20
LIGHT TRUCK	180.00	4.94	0	1.	100.	5.20
MEDIUM TRUCK	250.00	8.19	0	1.	100.	5.20
HEAVY TRUCK	300.00	12.93	0	1.	100.	5.20
WAGON	200.00	.30	0	2.	100.	10.40
FORAGE WAGON 14FT	200.00	.60	0	1.	100.	5.20
FORAGE WAGON 16FT	150.00	.64	0	1.	100.	5.20

TABLE 7

ESTIMATED TOTAL COST PER HOUR BY COMPONENTS FOR SPECIFIED ITEMS OF MACHINERY WITH RECOMMENDED TRACTOR SIZE (ALL LABOR INCLUDED IN MACHINE VARIABLE COST).

MACHINE	TRACTOR HP	ANNUAL HOURS USE	MACHINE COSTS			TRACTOR COST/ HOUR	TOTAL COST/ HOUR
			ANNUAL FIXED COST	FIXED COST/ HOUR	VARIABLE COST/ HOUR		
PLOW 2-16	40	120.00	191.64	1.60	5.74	7.48	14.81
PLOW 3-16	60	120.00	366.80	3.06	6.14	10.84	20.03
PLOW 4-16	75	120.00	572.58	4.77	6.61	13.50	24.88
PLOW 5-16	100	120.00	886.67	7.39	7.34	18.16	32.89
PLOW 6-16	120	130.00	1044.15	8.03	7.75	22.23	38.01
PLOW 7-16	140	130.00	1332.31	10.25	8.45	24.93	43.63
PLOW 8-16	160	130.00	1443.23	11.10	8.71	26.88	46.69
PLOW 9-18	225	150.00	2218.32	14.79	10.83	39.82	65.44
PLOW 10-18	225	150.00	2287.68	15.25	11.00	39.82	66.07
PLOW 12-18	275	150.00	2545.79	16.97	11.62	47.69	76.29
CHISEL PLOW 15 FT	120	100.00	551.18	5.51	6.38	22.23	34.12
CHISEL PLOW 17 FT	140	100.00	841.44	8.41	7.02	24.93	40.36
CHISEL PLOW 20 FT	160	100.00	1088.31	10.88	7.54	26.88	45.30
CHISEL PLOW WING 24	225	100.00	1155.13	11.55	7.77	39.82	59.15
CHISEL PLOW WING 29	250	100.00	1382.39	13.82	8.28	45.74	67.84
CHISEL PLOW WING 35	300	100.00	1408.17	14.08	8.34	51.86	74.28
FIELD CULTIVATOR 18	100	120.00	530.04	4.42	6.41	18.16	28.99
FIELD CULTIVATOR 28	160	120.00	990.86	8.26	7.51	26.88	42.65
FIELD CULTIVATOR 37	225	120.00	1290.55	10.75	8.23	39.82	58.80
MIN-TIL PLANTER 4-38	40	60.00	1304.66	21.74	13.06	7.48	42.28
MIN-TIL PLANTER 6-38	60	60.00	2018.68	33.64	15.82	10.84	60.31
MIN-TIL PLANTER 6-30	60	60.00	1860.70	31.01	15.22	10.84	57.06
MIN-TIL PLANTER 8-30	75	60.00	2326.58	38.78	17.01	13.50	69.29
DISK 10 FT	60	100.00	416.59	4.17	6.16	10.84	21.16
DISK 16 FT	75	100.00	889.23	8.89	7.18	13.50	29.57
DISK 17 FT	75	100.00	1067.81	10.68	7.61	13.50	31.78

TABLE 7, CONTINUED

ESTIMATED TOTAL COST PER HOUR BY COMPONENTS FOR SPECIFIED ITEMS OF MACHINERY WITH RECOMMENDED TRACTOR SIZE (ALL LABOR INCLUDED IN MACHINE VARIABLE COST).

MACHINE	TRACTOR HP	ANNUAL HOURS USE	MACHINE COSTS			TRACTOR COST/ HOUR	TOTAL COST/ HOUR
			ANNUAL FIXED COST	FIXED COST/ HOUR	VARIABLE COST/ HOUR		
DISK 20 FT	100	100.00	1107.10	11.07	7.63	18.16	36.87
DISK 21 FT	100	100.00	1213.21	12.13	7.90	18.16	38.19
DISK 24 FT	120	100.00	1625.69	16.26	8.83	22.23	47.32
DISK 28 FT	140	100.00	1885.18	18.85	9.41	24.93	53.19
DISK 32 FT	160	100.00	2059.19	20.59	9.80	26.88	57.27
DISK OFFSET 14 FT	140	100.00	997.38	9.97	7.40	24.93	42.31
DISK OFFSET 16 FT	160	100.00	1205.46	12.05	7.85	26.88	46.78
DISK OFFSET 18 FT	180	100.00	1326.54	13.27	8.10	33.48	54.85
DISK-WING OFFSET 21	225	100.00	1540.45	15.40	8.62	39.82	63.85
DISK-WING OFFSET 23	225	100.00	1909.43	19.09	9.45	39.82	68.37
LANDPLANE 45-12FT	180	75.00	1140.12	15.20	6.51	33.48	55.19
LANDPLANE 54-12FT	225	75.00	1793.52	23.91	7.08	39.82	70.82
LANDPLANE 54-15FT	225	75.00	1897.88	25.31	7.13	39.82	72.26
LANDPLANE 75-14FT	225	75.00	2055.49	27.41	7.23	39.82	74.46
SPRINGTOOTH DRAG 30	60	30.00	490.21	16.34	6.36	10.84	33.54
SPRINGTOOTH DRAG 48	75	35.00	913.36	26.10	7.02	13.50	46.62
FERTILIZER SPRDR 40	60	30.00	622.56	20.75	7.85	10.84	39.44
CORN PLANTER 4-38	40	60.00	972.75	16.21	11.75	7.48	35.44
CORN PLANTER 6-38	60	60.00	1470.85	24.51	13.67	10.84	49.02
CORN PLANTER 6-30	60	60.00	1369.27	22.82	13.28	10.84	46.94
CORN PLANTER 8-30	75	60.00	1725.59	28.76	14.65	13.50	56.91
POTATO PLANTER 4 ROW	120	65.00	2193.01	33.74	23.96	22.23	79.93
BEET PLANTER 12ROW	100	60.00	2086.12	34.77	16.69	18.16	69.62
GRAIN DRILL PW 14 FT	40	80.00	1299.68	16.25	13.31	7.48	37.04
GRAIN DRILL PW 16 FT	60	80.00	1770.32	22.13	15.36	10.84	48.33
GRAIN DRILL PW 20 FT	75	80.00	2083.17	26.04	16.69	13.50	56.23

TABLE 7, CONTINUED

ESTIMATED TOTAL COST PER HOUR BY COMPONENTS FOR SPECIFIED ITEMS OF MACHINERY WITH RECOMMENDED TRACTOR SIZE (ALL LABOR INCLUDED IN MACHINE VARIABLE COST).

MACHINE	TRACTOR HP	ANNUAL HOURS USE	MACHINE COSTS			TRACTOR COST/ HOUR	TOTAL COST/ HOUR
			ANNUAL FIXED COST	FIXED COST/ HOUR	VARIABLE COST/ HOUR		
GRAIN DRILL PW 24 FT	75	80.00	2370.24	29.63	17.91	13.50	61.04
GRAIN DRILL PW 28 FT	100	80.00	2663.80	33.30	19.14	18.16	70.60
CULTIVATOR 4-38	40	100.00	335.80	3.36	6.10	7.48	16.94
CULTIVATOR 6-38	60	100.00	510.12	5.10	6.47	10.84	22.40
CULTIVATOR 6-30	60	100.00	382.64	3.83	6.20	10.84	20.86
CULTIVATOR 8-30	75	100.00	536.02	5.36	6.51	13.50	25.38
ROTARY HOE 16	40	40.00	429.60	10.74	5.86	7.48	24.08
POTATO CULT. 4 ROW	75	130.00	549.01	4.22	6.73	13.50	24.45
BEET CULT. 12 ROW	100	60.00	863.18	14.39	6.99	18.16	39.53
BEET THINNER 6 ROW	100	100.00	2000.72	20.01	11.69	18.16	49.86
BEET THINNER 12 ROW	120	100.00	3792.43	37.92	15.74	22.23	75.89
SPRAYER 30FT	40	80.00	387.86	4.85	10.24	7.48	22.57
SPRAYER 50FT	60	100.00	625.10	6.25	11.45	10.84	28.53
SPRAYER HI PRES 50FT	60	100.00	1814.21	18.14	17.18	10.84	46.16
ANHYDROUS APPLICATOR	120	40.00	671.40	16.79	9.42	22.23	48.44
SHREDDER 12FT	60	100.00	691.92	6.92	6.14	10.84	23.90
SWATHER-COND. 12FT	---	80.00	2644.04	33.05	13.39	0	46.44
SWATHER-COND. 15FT	---	80.00	2671.86	33.40	13.41	0	46.81
SWATHER 12 FT	---	80.00	2426.52	30.33	13.05	0	43.38
SWATHER 15 FT	---	80.00	2454.34	30.68	13.06	0	43.74
SWATHER 18 FT	---	80.00	2514.34	31.43	13.13	0	44.56
SWATHER 20 FT	---	80.00	2798.19	34.98	13.56	0	48.54
1 TON STACKER	60	200.00	1419.10	7.10	11.17	10.84	29.10
3 TON STACKER	75	220.00	2204.83	10.02	13.29	13.50	36.81
6 TON STACKER	100	280.00	3054.03	10.91	16.18	18.16	45.25
BALER PTO TWINE	40	200.00	1132.20	5.66	9.72	7.48	22.86

TABLE 7. CONTINUED

ESTIMATED TOTAL COST PER HOUR BY COMPONENTS FOR SPECIFIED ITEMS OF MACHINERY WITH RECOMMENDED TRACTOR SIZE (ALL LABOR INCLUDED IN MACHINE VARIABLE COST).

MACHINE	TRACTOR HP	ANNUAL HOURS USE	MACHINE COSTS			TRACTOR COST/HOUR	TOTAL COST/HOUR
			ANNUAL FIXED COST	FIXED COST/HOUR	VARIABLE COST/HOUR		
ROUND BALE	60	200.00	1430.07	7.15	8.30	10.84	26.29
ROTARY MOWER	40	100.00	287.89	2.88	6.01	7.48	16.37
RAKE (HYD)	40	200.00	345.70	1.73	5.90	7.48	15.11
FORAGE HARV. 1 ROW	60	100.00	1552.12	15.52	10.63	10.84	36.99
FORAGE HARV. 2 ROW	100	100.00	1829.85	18.30	11.13	18.16	47.59
FOR HARV 2ROW SP	---	150.00	8095.09	53.97	31.38	0	85.35
FOR HAR 3ROW SP	---	150.00	8379.21	55.86	33.33	0	89.19
FORAGE BLOWER LG	60	50.00	336.98	6.74	5.67	10.84	23.24
CORN PICKER 2-38	40	150.00	1689.68	11.26	11.41	7.48	30.15
PICKER-SHELLER 2-ROW	60	150.00	1908.81	12.73	11.90	10.84	35.46
COMBINE SM GRAIN SML	SML	200.00	646.58	3.23	8.95	40.04	52.22
COMBINE SM GRAIN MED	MED	200.00	720.19	3.60	9.08	56.08	68.76
COMBINE SM GRAIN LGE	LRG	200.00	833.71	4.17	9.28	64.98	78.43
COMBINE SOYBEANS SML	SML	200.00	857.15	4.29	9.33	40.04	53.66
COMBINE SOYBEANS MED	MED	200.00	973.15	4.87	9.55	56.08	70.50
COMBINE SOYBEANS LGE	LRG	200.00	1248.91	6.24	10.05	64.98	81.28
COMBINE CORN 2-38 SM	SML	200.00	699.46	3.50	9.88	40.04	53.42
COMBINE CORN 3-38 SM	SML	200.00	1123.95	5.62	11.19	40.04	56.85
COMBINE CORN 4-38 MD	MED	200.00	1512.46	7.56	12.37	56.08	76.02
COMBINE CORN 4-30 MD	MED	200.00	1437.85	7.19	12.16	56.08	75.43
COMBINE CORN 6-30 LG	LRG	200.00	1973.10	9.87	13.79	64.98	88.64
COMBINE CORN 8-30 LG	LRG	200.00	2587.30	12.94	15.66	64.98	93.58
POTATO HARVSTR. 2ROW	120	120.00	3604.15	30.03	24.57	22.23	76.84
BEEF LIFTER 3 ROW	100	80.00	2389.99	29.87	10.76	18.16	58.79
BEEF LIFTER 4 ROW	100	80.00	2931.60	36.64	11.43	18.16	66.23
BEEF LIFTER 6 ROW	120	80.00	4412.59	55.16	13.28	22.23	90.66
BEEF TOPPER 3 ROW	60	80.00	1133.21	14.17	8.92	10.84	33.92
BEEF TOPPER 4 ROW	75	80.00	1439.58	17.99	9.43	13.50	40.92
BEEF TOPPER 6 ROW	100	80.00	1560.78	19.51	9.61	18.16	47.28
BEEF WAGON BTON	75	80.00	1040.61	13.01	5.79	13.50	32.30
LIGHT TRUCK	---	400.00	1565.92	3.91	15.64	0	19.56
MEDIUM TRUCK	---	400.00	2579.94	6.45	21.64	0	28.09
HEAVY TRUCK	---	400.00	4038.51	10.10	31.88	0	41.97
WAGON	40	250.00	385.03	1.54	10.70	7.48	19.72
FORAGE WAGON 14FT	40	130.00	887.74	6.83	5.80	7.48	20.10
FORAGE WAGON 16FT	40	130.00	929.24	7.15	5.84	7.48	20.46

TABLE 8

ESTIMATED TOTAL COST PER ACRE BY COMPONENTS FOR SPECIFIED ITEMS OF MACHINERY WITH RECOMMENDED TRACTOR SIZE (ALL LABOR INCLUDED IN MACHINE VARIABLE COST).

MACHINE	TRACTOR HP	ANNUAL ACRES USE	MACHINE COSTS			TRACTOR COST/ ACRE	TOTAL COST/ ACRE
			ANNUAL FIXED COST	FIXED COST/ ACRE	VARIABLE COST/ ACRE		
PLOW 2-16	40	139.29	191.64	1.38	4.94	6.44	12.76
PLOW 3-16	60	209.45	366.80	1.75	3.52	6.21	11.48
PLOW 4-16	75	279.10	572.58	2.05	2.84	5.80	10.70
PLOW 5-16	100	348.74	886.67	2.54	2.53	6.25	11.32
PLOW 6-16	120	453.82	1044.15	2.30	2.22	6.37	10.89
PLOW 7-16	140	529.27	1332.31	2.52	2.07	6.12	10.72
PLOW 8-16	160	604.71	1443.23	2.39	1.87	5.78	10.04
PLOW 9-18	225	883.64	2218.32	2.51	1.84	6.76	11.11
PLOW 10-18	225	981.82	2287.68	2.33	1.68	6.08	10.09
PLOW 12-18	275	1178.18	2545.79	2.16	1.48	6.07	9.71
CHISEL PLOW 15 FT	120	654.55	551.18	.84	.97	3.40	5.21
CHISEL PLOW 17 FT	140	741.82	841.44	1.13	.95	3.36	5.44
CHISEL PLOW 20 FT	160	872.73	1088.31	1.25	.86	3.08	5.19
CHISEL PLOW WING 24	225	1047.27	1155.13	1.10	.74	3.80	5.65
CHISEL PLOW WING 29	250	1265.45	1382.39	1.09	.65	3.61	5.36
CHISEL PLOW WING 35	300	1527.27	1408.17	.92	.55	3.40	4.86
FIELD CULTIVATOR 18	100	1047.27	530.04	.51	.73	2.08	3.32
FIELD CULTIVATOR 28	160	1629.09	990.86	.61	.55	1.98	3.14
FIELD CULTIVATOR 37	225	2152.73	1290.55	.60	.46	2.22	3.28
MIN-TIL PLANTER 4-38	40	225.58	1304.66	5.78	3.47	1.99	11.24
MIN-TIL PLANTER 6-38	60	338.55	2018.68	5.96	2.80	1.92	10.69
MIN-TIL PLANTER 6-30	60	267.27	1860.70	6.96	3.42	2.43	12.81
MIN-TIL PLANTER 8-30	75	356.36	2326.58	6.53	2.86	2.27	11.67
DISK 10 FT	60	484.85	416.59	.86	1.27	2.23	4.36
DISK 16 FT	75	775.76	889.23	1.15	.92	1.74	3.81
DISK 17 FT	75	824.24	1067.81	1.30	.92	1.64	3.86

TABLE 8, CONTINUED

ESTIMATED TOTAL COST PER ACRE BY COMPONENTS FOR SPECIFIED ITEMS OF MACHINERY WITH RECOMMENDED TRACTOR SIZE (ALL LABOR INCLUDED IN MACHINE VARIABLE COST).

MACHINE	TRACTOR HP	MACHINE COSTS				TRACTOR COST/ ACRE	TOTAL COST/ ACRE
		ANNUAL ACRES USE	ANNUAL FIXED COST	FIXED COST/ ACRE	VARIABLE COST/ ACRE		
DISK 20 FT	100	969.70	1107.10	1.14	.79	1.87	3.80
DISK 21 FT	100	1018.18	1213.21	1.19	.78	1.78	3.75
DISK 24 FT	120	1163.64	1625.69	1.40	.76	1.91	4.07
DISK 28 FT	140	1357.58	1885.18	1.39	.69	1.84	3.92
DISK 32 FT	160	1551.52	2059.19	1.33	.63	1.73	3.69
DISK OFFSET 14 FT	140	610.91	997.38	1.63	1.21	4.08	6.93
DISK OFFSET 16 FT	160	698.18	1205.46	1.73	1.12	3.85	6.70
DISK OFFSET 18 FT	180	785.45	1326.54	1.69	1.03	4.26	6.98
DISK-WING OFFSET 21	225	916.36	1540.45	1.68	.94	4.35	6.97
DISK-WING OFFSET 23	225	1003.64	1909.43	1.90	.94	3.97	6.81
LANDPLANE 45-12FT	180	480.00	1140.12	2.38	1.02	5.23	8.62
LANDPLANE 54-12FT	225	480.00	1793.52	3.74	1.11	6.22	11.07
LANDPLANE 54-15FT	225	600.00	1897.88	3.16	.89	4.98	9.03
LANDPLANE 75-14FT	225	560.00	2055.49	3.67	.97	5.33	9.97
SPRINGTOOTH DRAG 30	60	480.00	490.21	1.02	.40	.68	2.10
SPRINGTOOTH DRAG 48	75	1058.91	913.36	.86	.23	.45	1.54
FERTILIZER SPRDR 40	60	1163.64	622.56	.54	.20	.28	1.02
CORN PLANTER 4-38	40	290.03	972.75	3.35	2.43	1.55	7.33
CORN PLANTER 6-38	60	435.27	1470.85	3.38	1.88	1.49	6.76
CORN PLANTER 6-30	60	343.64	1369.27	3.98	2.32	1.89	8.20
CORN PLANTER 8-30	75	458.18	1725.59	3.77	1.92	1.77	7.45
POTATO PLANTER 4 ROW	120	248.97	2193.01	8.81	6.26	5.80	20.87
BEET PLANTER 12ROW	100	280.00	2086.12	7.45	3.58	3.89	14.92
GRAIN DRILL PW 14 FT	40	445.96	1299.68	2.91	2.39	1.34	6.64
GRAIN DRILL PW 16 FT	60	509.67	1770.32	3.47	2.41	1.70	7.59
GRAIN DRILL PW 20 FT	75	637.09	2083.17	3.27	2.10	1.70	7.06

TABLE 8, CONTINUED

ESTIMATED TOTAL COST PER ACRE BY COMPONENTS FOR SPECIFIED ITEMS OF MACHINERY WITH RECOMMENDED TRACTOR SIZE (ALL LABOR INCLUDED IN MACHINE VARIABLE COST).

MACHINE	TRACTOR HP	MACHINE COSTS				TRACTOR COST/ ACRE	TOTAL COST/ ACRE
		ANNUAL ACRES USE	ANNUAL FIXED COST	FIXED COST/ ACRE	VARIABLE COST/ ACRE		
GRAIN DRILL PW 24 FT	75	764.51	2370.24	3.10	1.87	1.41	6.39
GRAIN DRILL PW 28 FT	100	891.93	2663.80	2.99	1.72	1.63	6.33
CULTIVATOR 4-38	40	491.05	335.80	.68	1.24	1.52	3.45
CULTIVATOR 6-38	60	736.97	510.12	.69	.88	1.47	3.04
CULTIVATOR 6-30	60	581.82	382.64	.66	1.07	1.86	3.59
CULTIVATOR 8-30	75	775.76	536.02	.69	.84	1.74	3.27
ROTARY HOE 16	40	434.42	429.60	.99	.54	.69	2.22
POTATO CULT. 4 ROW	75	796.70	549.01	.69	1.10	2.20	3.99
BEET CULT. 12 ROW	100	360.00	863.18	2.40	1.16	3.03	6.59
BEET THINNER 6 ROW	100	210.00	2000.72	9.53	5.57	8.65	23.74
BEET THINNER 12 ROW	120	420.00	3792.43	9.03	3.75	5.29	18.07
SPRAYER 30FT	40	1134.55	387.86	.34	.72	.53	1.59
SPRAYER 50FT	60	2363.64	625.10	.26	.48	.46	1.21
SPRAYER HI PRES 50FT	60	2363.64	1814.21	.77	.73	.46	1.95
ANHYDROUS APPLICATOR	120	356.36	671.40	1.88	1.06	2.50	5.44
SHREDDER 12FT	60	436.36	691.92	1.59	1.41	2.48	5.48
SWATHER-COND. 12FT	---	436.36	2644.04	6.06	2.46	0	8.51
SWATHER-COND. 15FT	---	545.45	2671.86	4.90	1.97	0	6.86
SWATHER 12 FT	---	465.45	2426.52	5.21	2.24	0	7.46
SWATHER 15 FT	---	581.82	2454.34	4.22	1.80	0	6.01
SWATHER 18 FT	---	698.18	2514.34	3.60	1.50	0	5.11
SWATHER 20 FT	---	775.76	2798.19	3.61	1.40	0	5.01
1 TON STACKER	60	829.09	1419.10	1.71	2.69	2.61	7.02
3 TON STACKER	75	1064.00	2204.83	2.07	2.75	2.79	7.61
6 TON STACKER	100	1547.64	3054.03	1.97	2.93	3.29	8.19
BALER PTO TWINE	40	756.36	1132.20	1.50	2.57	1.98	6.04

TABLE 4, CONTINUED

ESTIMATED TOTAL COST PER ACRE BY COMPONENTS FOR SPECIFIED ITEMS OF MACHINERY WITH RECOMMENDED TRACTOR SIZE (ALL LABOR INCLUDED IN MACHINE VARIABLE COST).

MACHINE	TRACTOR HP	MACHINE COSTS				TRACTOR COST/ ACRE	TOTAL COST/ ACRE
		ANNUAL ACRES USE	ANNUAL FIXED COST	FIXED COST/ ACRE	VARIABLE COST/ ACRE		
ROUND BALER	60	927.27	1430.07	1.54	1.79	2.34	5.67
ROTARY MOWER	40	272.73	287.89	1.06	2.20	2.74	6.00
RAKE (HYD)	40	698.18	345.70	.50	1.69	2.14	4.33
FORAGE HARV. 1 ROW	60	94.55	1552.12	16.42	11.24	11.46	39.12
FORAGE HARV. 2 ROW	100	165.45	1829.85	11.06	6.73	10.98	28.76
FOR HARV 2ROW SP	---	305.45	8095.09	26.50	15.41	0	41.91
FOR HAR 3ROW SP	---	458.18	8379.21	18.29	10.91	0	29.20
FORAGE BLOWER LG	60		336.98				
CORN PICKER 2-38	40	223.36	1689.68	7.56	7.66	5.02	20.25
PICKER-SHELLER 2-ROW	60	223.36	1908.81	8.55	7.99	7.28	23.81
COMBINE SM GRAIN SML SML		819.39	646.58	.79	2.18	9.77	12.75
COMBINE SM GRAIN MED MED		945.45	720.19	.76	1.92	11.86	14.54
COMBINE SM GRAIN LGE LRG		1260.61	833.71	.66	1.47	10.31	12.44
COMBINE SOYBEANS SML SML		716.97	857.15	1.20	2.60	11.17	14.97
COMBINE SOYBEANS MED MED		827.27	973.15	1.18	2.31	13.56	17.04
COMBINE SOYBEANS LGE LRG		992.73	1248.91	1.26	2.02	13.09	16.37
COMBINE CORN 2-38 SM SML		297.82	699.46	2.35	6.64	26.89	35.87
COMBINE CORN 3-38 SM SML		449.09	1123.95	2.50	4.98	17.83	25.32
COMBINE CORN 4-38 MD MED		598.47	1512.46	2.53	4.14	18.74	25.40
COMBINE CORN 4-30 MD MED		520.00	1437.85	2.77	4.68	21.57	29.01
COMBINE CORN 6-30 LG LRG		780.00	1973.10	2.53	3.54	16.66	22.73
COMBINE CORN 8-30 LG LRG		945.45	2587.30	2.74	3.31	13.75	19.80
POTATO HARVSTR. 2ROW	120	298.76	3604.15	12.06	9.87	8.93	30.86
BEEET LIFTER 3 ROW	100	208.00	2389.99	11.49	4.14	6.99	22.61
BEEET LIFTER 4 ROW	100	277.21	2931.60	10.58	3.30	5.24	19.11
BEEET LIFTER 6 ROW	120	416.00	4412.69	10.61	2.55	4.27	17.44
BEEET TOPPER 3 ROW	60	256.00	1133.21	4.43	2.79	3.39	10.60
BEEET TOPPER 4 ROW	75	341.18	1439.58	4.22	2.21	3.17	9.60
BEEET TOPPER 6 ROW	100	512.00	1500.78	3.05	1.50	2.84	7.39

TABLE 9

ESTIMATED FUEL USE PER ACRE FOR SPECIFIED ITEMS OF MACHINERY

MACHINE	TRACTOR HP	TRACTOR FUEL CONS.	MACHINE FUEL CONS.	TOTAL FUEL CONS.
PLOW 2-16	40	2.07	0	2.07
PLOW 3-16	60	2.06	0	2.06
PLOW 4-16	75	1.93	0	1.93
PLOW 5-16	100	2.06	0	2.06
PLOW 6-16	120	2.06	0	2.06
PLOW 7-16	140	2.06	0	2.06
PLOW 8-16	160	2.06	0	2.06
PLOW 9-18	225	2.29	0	2.29
PLOW 10-18	225	2.06	0	2.06
PLOW 12-18	275	2.10	0	2.10
CHISEL PLOW 15 FT	120	1.10	0	1.10
CHISEL PLOW 17 FT	140	1.13	0	1.13
CHISEL PLOW 20 FT	160	1.10	0	1.10
CHISEL PLOW WING 24	225	1.29	0	1.29
CHISEL PLOW WING 29	250	1.19	0	1.19
CHISEL PLOW WING 35	300	1.18	0	1.18
FIELD CULTIVATOR 18	100	.69	0	.69
FIELD CULTIVATOR 28	160	.71	0	.71
FIELD CULTIVATOR 37	225	.75	0	.75
MIN-TIL PLANTER 4-38	40	.64	0	.64
MIN-TIL PLANTER 6-38	60	.64	0	.64
MIN-TIL PLANTER 6-30	60	.81	0	.81
MIN-TIL PLANTER 8-30	75	.76	0	.76
DISK 10 FT	60	.74	0	.74
DISK 16 FT	75	.58	0	.58
DISK 17 FT	75	.55	0	.55

TABLE 9, CONTINUED

ESTIMATED FUEL USE PER ACRE FOR SPECIFIED ITEMS OF MACHINERY

MACHINE	TRACTOR HP	TRACTOR FUEL CONS.	MACHINE FUEL CONS.	TOTAL FUEL CONS.
DISK 20 FT	100	.62	0	.62
DISK 21 FT	100	.59	0	.59
DISK 24 FT	120	.62	0	.62
DISK 28 FT	140	.62	0	.62
DISK 32 FT	160	.62	0	.62
DISK OFFSET 14 FT	140	1.38	0	1.38
DISK OFFSET 16 FT	160	1.38	0	1.38
DISK OFFSET 18 FT	180	1.38	0	1.38
DISK-WING OFFSET 21	225	1.47	0	1.47
DISK-WING OFFSET 23	225	1.35	0	1.35
LANDPLANE 45-12FT	180	1.69	0	1.69
LANDPLANE 54-12FT	225	2.11	0	2.11
LANDPLANE 54-15FT	225	1.69	0	1.69
LANDPLANE 75-14FT	225	1.81	0	1.81
SPRINGTOOTH DRAG 30	60	.22	0	.22
SPRINGTOOTH DRAG 48	75	.15	0	.15
FERTILIZER SPRDR 40	60	.09	0	.09
CORN PLANTER 4-38	40	.50	0	.50
CORN PLANTER 6-38	60	.50	0	.50
CORN PLANTER 6-30	60	.63	0	.63
CORN PLANTER 8-30	75	.59	0	.59
POTATO PLANTER 4 ROW	120	1.88	0	1.88
BEET PLANTER 12ROW	100	1.29	0	1.29
GRAIN DRILL PW 14 FT	40	.43	0	.43
GRAIN DRILL PW 16 FT	60	.57	0	.57
GRAIN DRILL PW 20 FT	75	.57	0	.57

TABLE 9, CONTINUED

ESTIMATED FUEL USE PER ACRE FOR SPECIFIED ITEMS OF MACHINERY

MACHINE	TRACTOR HP	TRACTOR FUEL CONS.	MACHINE FUEL CONS.	TOTAL FUEL CONS.
GRAIN DRILL PW 24 FT	75	.47	0	.47
GRAIN DRILL PW 28 FT	100	.54	0	.54
CULTIVATOR 4-38	40	.49	0	.49
CULTIVATOR 6-38	60	.49	0	.49
CULTIVATOR 6-30	60	.62	0	.62
CULTIVATOR 8-30	75	.58	0	.58
ROTARY HOE 16	40	.22	0	.22
POTATO CULT. 4 ROW	75	.73	0	.73
BEET CULT. 12 ROW	100	1.00	0	1.00
BEET THINNER 6 ROW	100	2.86	0	2.86
BEET THINNER 12 ROW	120	1.71	0	1.71
SPRAYER 30FT	40	.17	0	.17
SPRAYER 50FT	60	.15	0	.15
SPRAYER HI PRES 50FT	60	.15	0	.15
ANHYDROUS APPLICATOR	120	.81	0	.81
SHREDDER 12FT	60	.83	0	.83
SWATHER-COND. 12FT	---	0	.55	.55
SWATHER-COND. 15FT	---	0	.44	.44
SWATHER 12 FT	---	0	.52	.52
SWATHER 15 FT	---	0	.41	.41
SWATHER 18 FT	---	0	.34	.34
SWATHER 20 FT	---	0	.31	.31
1 TON STACKER	60	.87	0	.87
3 TON STACKER	75	.93	0	.93
6 TON STACKER	100	1.09	0	1.09
BALER PTO TWINE	40	.63	0	.63

TABLE 1, CONTINUED
ESTIMATED FUEL USE PER ACRE FOR SPECIFIED ITEMS OF MACHINERY

MACHINE	TRACTOR HP	TRACTOR FUEL CONS.	MACHINE FUEL CONS.	TOTAL FUEL CONS.
ROUND BALER	60	.78	0	.78
ROTARY MOWER	40	.88	0	.88
RAKE (HYD)	40	.69	0	.69
FORAGE HARV. 1 ROW	60	3.81	0	3.81
FORAGE HARV. 2 ROW	100	3.63	0	3.63
FOR HARV 2ROW SP	---	0	3.63	3.63
FOR HAR 3ROW SP	---	0	2.78	2.78
FORAGE BLOWER LG	60			
CORN PICKER 2-38	40	1.61	0	1.61
PICKER-SHELLER 2-ROW	60	2.42	0	2.42
COMBINE SM GRAIN SML	SML	1.46	0	1.46
COMBINE SM GRAIN MED	MED	1.40	0	1.40
COMBINE SM GRAIN LGE	LRG	1.22	0	1.22
COMBINE SOYBEANS SML	SML	1.67	0	1.67
COMBINE SOYBEANS MED	MED	1.60	0	1.60
COMBINE SOYBEANS LGE	LRG	1.55	0	1.55
COMBINE CORN 2-38 SM	SML	4.03	0	4.03
COMBINE CORN 3-38 SM	SML	2.67	0	2.67
COMBINE CORN 4-38 MD	MED	2.21	0	2.21
COMBINE CORN 4-30 MD	MED	2.54	0	2.54
COMBINE CORN 6-30 LG	LRG	1.97	0	1.97
COMBINE CORN 8-30 LG	LRG	1.62	0	1.62
POTATO HRVSTR. 2ROW	120	2.89	0	2.89
BEET LIFTER 3 ROW	100	2.31	0	2.31
BEET LIFTER 4 ROW	100	1.73	0	1.73
BEET LIFTER 6 ROW	120	1.38	0	1.38
BEET TOPPER 3 ROW	60	1.13	0	1.13
BEET TOPPER 4 ROW	75	1.06	0	1.06
BEET TOPPER 6 ROW	100	.94	0	.94
BEET WAGON 8TON	75	1.30	0	1.30
LIGHT TRUCK	---	0	2.64	2.64
MEDIUM TRUCK	---	0	3.96	3.96
HEAVY TRUCK	---	0	6.60	6.60
WAGON	40	.63	0	.63
FORAGE WAGON 14FT	40	1.45	0	1.45
FORAGE WAGON 16FT	40	1.45	0	1.45

TABLE 10

SUGGESTED CUSTOM RATES INCLUDING LABOR AND FUEL
COSTS WITH SUGGESTED TRACTOR

MACHINE	HP RANGE OF TRACTOR	ACRES OF USE	CUSTOM RATE/HOUR	CUSTOM RATE/ACRE
PLOW 2-16	40	150.00	17.64	15.20
PLOW 3-16	60	225.00	23.78	13.63
PLOW 4-16	75	300.00	29.46	12.67
PLOW 5-16	100	375.00	38.85	13.37
PLOW 6-16	120	500.00	44.72	12.81
PLOW 7-16	140	575.00	51.38	12.62
PLOW 8-16	160	650.00	55.10	11.85
PLOW 9-18	225	975.00	76.87	13.05
PLOW 10-18	225	1050.00	78.10	11.93
PLOW 12-18	275	1200.00	91.18	11.61
CHISEL PLOW 15 FT	120	700.00	40.52	6.19
CHISEL PLOW 17 FT	140	800.00	47.70	6.43
CHISEL PLOW 20 FT	160	950.00	53.30	6.11
CHISEL PLOW WING 24	225	1100.00	70.31	6.71
CHISEL PLOW WING 29	250	1350.00	80.37	6.35
CHISEL PLOW WING 35	300	1600.00	88.37	5.79
FIELD CULTIVATOR 18	100	1050.00	34.77	3.98
FIELD CULTIVATOR 28	160	1630.00	51.17	3.77
FIELD CULTIVATOR 37	225	2150.00	70.58	3.93
MIN-TIL PLANTER 4-38	40	250.00	48.18	12.82
MIN-TIL PLANTER 6-38	60	350.00	71.04	12.59
MIN-TIL PLANTER 6-30	60	300.00	64.42	14.46
MIN-TIL PLANTER 8-30	75	400.00	78.07	13.14
DISK 10 FT	60	485.00	25.39	5.24
DISK 16 FT	75	775.00	35.49	4.58
DISK 17 FT	75	825.00	38.13	4.63

TABLE 10 ,CONTINUED

SUGGESTED CUSTOM RATES INCLUDING LABOR AND FUEL
COSTS WITH SUGGESTED TRACTOR

MACHINE	HP RANGE OF TRACTOR	ACRES OF USE	CUSTOM RATE/HOUR	CUSTOM RATE/ACRE
DISK 20 FT	100	970.00	44.24	4.56
DISK 21 FT	100	1020.00	45.80	4.50
DISK 24 FT	120	1170.00	56.67	4.87
DISK 28 FT	140	1360.00	63.79	4.70
DISK 32 FT	160	1560.00	68.59	4.42
DISK OFFSET 14 FT	140	610.00	50.79	8.31
DISK OFFSET 16 FT	160	700.00	56.10	8.04
DISK OFFSET 18 FT	180	790.00	65.73	8.37
DISK-WING OFFSET 21	225	920.00	76.55	8.35
DISK-WING OFFSET 23	225	1010.00	81.90	8.16
LANDPLANE 45-12FT	180	480.00	66.23	10.35
LANDPLANE 54-12FT	225	480.00	84.98	13.28
LANDPLANE 54-15FT	225	600.00	86.71	10.84
LANDPLANE 75-14FT	225	560.00	89.35	11.97
SPRINGTOOTH DRAG 30	60	480.00	40.25	2.52
SPRINGTOOTH DRAG 48	75	1060.00	55.91	1.85
FERTILIZER SPRDR 40	60	320.00	112.98	2.91
CORN PLANTER 4-38	40	290.00	42.53	8.80
CORN PLANTER 6-38	60	440.00	58.51	8.07
CORN PLANTER 6-30	60	350.00	55.83	9.75
CORN PLANTER 8-30	75	460.00	68.15	8.92
POTATO PLANTER 4 ROW	120	250.00	95.75	25.00
BEET PLANTER 12ROW	100	280.00	83.54	17.90
GRAIN DRILL PW 14 FT	40	450.00	44.27	7.94
GRAIN DRILL PW 16 FT	60	510.00	57.98	9.10
GRAIN DRILL PW 20 FT	75	640.00	67.34	8.46

TABLE 10, CONTINUED

SUGGESTED CUSTOM RATES INCLUDING LABOR AND FUEL
COSTS WITH SUGGESTED TRACTOR

MACHINE	HP RANGE OF TRACTOR	ACRES OF USE	CUSTOM RATE/HOUR	CUSTOM RATE/ACR
GRAIN DRILL PW 24 FT	75	770.00	72.99	7.64
GRAIN DRILL PW 28 FT	100	900.00	84.36	7.57
CULTIVATOR 4-38	40	500.00	20.25	4.12
CULTIVATOR 6-38	60	740.00	26.86	3.64
CULTIVATOR 6-30	60	590.00	24.97	4.29
CULTIVATOR 8-30	75	780.00	30.42	3.92
ROTARY HOE 16	40	440.00	28.73	2.65
POTATO CULT. 4 ROW	75	800.00	29.32	4.78
BEET CULT. 12 ROW	100	360.00	47.44	7.91
BEET THINNER 6 ROW	100	210.00	59.83	28.49
BEET THINNER 12 ROW	120	420.00	91.07	21.68
SPRAYER 30FT	40	1140.00	27.05	1.91
SPRAYER 50FT	60	2370.00	34.22	1.45
SPRAYER HI PRES 50FT	60	2370.00	55.33	2.34
ANHYDROUS APPLICATOR	120	400.00	55.92	6.28
SHREDDER 12FT	60	440.00	28.61	6.56
SWATHER-COND. 12FT	---	440.00	55.40	10.16
SWATHER-COND. 15FT	---	550.00	55.84	8.19
SWATHER 12 FT	---	470.00	51.71	8.89
SWATHER 15 FT	---	590.00	51.98	7.15
SWATHER 18 FT	---	700.00	53.38	6.12
SWATHER 20 FT	---	780.00	58.02	5.98
1 TON STACKER	60	910.00	34.17	8.24
3 TON STACKER	75	1170.00	43.08	8.91
6 TON STACKER	100	1700.00	53.12	9.61
BALER PTO TWINE	40	970.00	25.93	6.86

TABLE 10, CONTINUED
SUGGESTED CUSTOM RATES INCLUDING LABOR AND FUEL
COSTS WITH SUGGESTED TRACTOR

MACHINE	HP RANGE OF TRACTOR	ACRES OF USE	CUSTOM RATE/HOUR	CUSTOM RATE/ACRE
ROUND BALER	60	1020.00	30.77	6.64
ROTARY MOWER	40	280.00	19.55	7.17
RAKE (HYD)	40	350.00	20.19	5.78
FORAGE HARV. 1 ROW	60	100.00	43.37	45.87
FORAGE HARV. 2 ROW	100	180.00	55.33	33.44
FOR HARV 2ROW SP	---	330.00	97.60	47.93
FOR HAR 3ROW SP	---	500.00	101.42	33.20
FORAGE BLOWER LG	60	300.00	21.15	
CORN PICKER 2-38	40	200.00	37.76	25.36
PICKER-SHELLER 2-ROW	60	200.00	44.34	29.77
COMBINE SM GRAIN SML	SML	1100.00	61.68	15.05
COMBINE SM GRAIN MED	MED	1240.00	81.48	17.24
COMBINE SM GRAIN LGE	LRG	1380.00	93.69	14.86
COMBINE SOYBEANS SML	SML	970.00	63.05	17.59
COMBINE SOYBEANS MED	MED	1090.00	83.19	20.11
COMBINE SOYBEANS LGE	LRG	1210.00	96.19	19.38
COMBINE CORN 2-38 SM	SML	410.00	62.96	42.28
COMBINE CORN 3-38 SM	SML	490.00	67.66	30.13
COMBINE CORN 4-38 MD	MED	650.00	90.50	30.24
COMBINE CORN 4-30 MD	MED	570.00	89.76	34.52
COMBINE CORN 6-30 LG	LRG	850.00	105.39	27.02
COMBINE CORN 8-30 LG	LRG	1030.00	111.02	23.49
POTATO HRVSTR. 2ROW	120	300.00	92.05	36.97
BEET LIFTER 3 ROW	100	210.00	70.21	27.00
BEET LIFTER 4 ROW	100	280.00	79.04	22.81
BEET LIFTER 6 ROW	120	420.00	108.17	20.80
BEET TOPPER 3 ROW	60	260.00	40.44	12.64
BEET TOPPER 4 ROW	75	350.00	48.56	11.39
BEET TOPPER 6 ROW	100	520.00	56.38	8.81
BEET WAGON 8TON	75	280.00	38.60	
LIGHT TRUCK	---	450.00	25.10	
MEDIUM TRUCK	---	450.00	36.40	
HEAVY TRUCK	---	450.00	54.57	
WAGON	40	900.00	23.75	
FORAGE WAGON 14FT	40	180.00	25.72	
FORAGE WAGON 16FT	40	180.00	26.23	

TABLE 11

ESTIMATED OPERATING COSTS, OWNERSHIP COSTS AND SUGGESTED CUSTOM RATES
ON A PER HOUR AND A PER ACRE BASIS

MACHINE	TRACTOR HP	CASH COSTS		TOTAL COSTS		SUGGESTED CUSTOM RATES	
		OPERATING PER HOUR	PER ACRE	PER HOUR	PER ACRE	PER HOUR	PER ACRE
PLOW 2-16	40	4.42	3.81	14.81	12.76	17.64	15.20
PLOW 3-16	60	6.70	3.87	20.03	11.48	23.78	13.63
PLOW 4-16	75	8.70	3.74	24.88	10.70	29.46	12.67
PLOW 5-16	100	12.13	4.17	32.89	11.32	38.85	13.37
PLOW 6-16	120	14.65	4.20	38.01	10.89	44.72	12.81
PLOW 7-16	140	17.18	4.22	43.63	10.72	51.38	12.62
PLOW 8-16	160	19.44	4.18	46.69	10.04	55.10	11.85
PLOW 9-18	225	27.11	4.60	65.44	11.11	76.87	13.05
PLOW 10-18	225	27.28	4.17	66.07	10.09	78.10	11.93
PLOW 12-18	275	32.56	4.15	76.29	9.71	91.18	11.61
CHISEL PLOW 15 FT	120	13.28	2.03	34.12	5.21	40.52	6.19
CHISEL PLOW 17 FT	140	15.75	2.12	40.36	5.44	47.70	6.43
CHISEL PLOW 20 FT	160	18.26	2.09	45.30	5.19	53.30	6.11
CHISEL PLOW WING 24	225	24.05	2.30	59.15	5.65	70.31	6.71
CHISEL PLOW WING 29	250	27.17	2.15	67.84	5.36	80.37	6.35
CHISEL PLOW WING 35	300	31.64	2.07	74.28	4.86	88.37	5.79
FIELD CULTIVATOR 18	100	11.20	1.28	28.99	3.32	34.77	3.98
FIELD CULTIVATOR 28	160	18.24	1.34	42.65	3.14	51.17	3.77
FIELD CULTIVATOR 37	225	24.50	1.37	58.80	3.28	70.58	3.93
MIN-TIL PLANTER 4-38	40	8.92	2.37	42.28	11.24	48.18	12.82
MIN-TIL PLANTER 6-38	60	13.63	2.41	60.31	10.69	71.04	12.59
MIN-TIL PLANTER 6-30	60	13.02	2.92	57.06	12.81	64.42	14.46
MIN-TIL PLANTER 8-30	75	16.28	2.74	69.29	11.67	78.07	13.14
DISK 10 FT	60	6.78	1.40	21.16	4.36	25.39	5.24
DISK 16 FT	75	9.27	1.19	29.57	3.81	35.49	4.58
DISK 17 FT	75	9.70	1.18	31.78	3.86	38.13	4.63

TABLE 11, CONTINUED

ESTIMATED OPERATING COSTS, OWNERSHIP COSTS AND SUGGESTED CUSTOM RATES
ON A PER HOUR AND A PER ACRE BASIS

MACHINE	TRACTOR HP	CASH OPERATING COSTS		TOTAL COSTS		SUGGESTED CUSTOM RATES	
		PER HOUR	PER ACRE	PER HOUR	PER ACRE	PER HOUR	PER ACRE
DISK 20 FT	100	12.43	1.28	36.87	3.80	44.24	4.56
DISK 21 FT	100	12.69	1.25	38.19	3.75	45.80	4.50
DISK 24 FT	120	15.72	1.35	47.32	4.07	56.67	4.87
DISK 28 FT	140	18.14	1.34	53.19	3.92	63.79	4.70
DISK 32 FT	160	20.53	1.32	57.27	3.69	68.59	4.42
DISK OFFSET 14 FT	140	16.14	2.64	42.31	6.93	50.79	8.31
DISK OFFSET 16 FT	160	18.57	2.66	46.78	6.70	56.10	8.04
DISK OFFSET 18 FT	180	21.51	2.74	54.85	6.98	65.73	8.37
DISK-WING OFFSET 21	225	24.90	2.72	63.85	6.97	76.55	8.35
DISK-WING OFFSET 23	225	25.73	2.56	68.37	6.81	81.90	8.16
LANDPLANE 45-12FT	180	19.60	3.06	55.19	8.62	66.23	10.35
LANDPLANE 54-12FT	225	23.05	3.60	70.82	11.07	84.98	13.28
LANDPLANE 54-15FT	225	23.10	2.89	72.26	9.03	86.71	10.84
LANDPLANE 75-14FT	225	23.19	3.11	74.46	9.97	89.35	11.97
SPRINGTOOTH DRAG 30	60	6.67	.42	33.54	2.10	40.25	2.52
SPRINGTOOTH DRAG 48	75	8.80	.29	46.62	1.54	55.91	1.85
FERTILIZER SPRINK 40	60	6.86	.18	39.44	1.02	112.98	2.91
CORN PLANTER 4-38	40	7.62	1.58	35.44	7.33	42.53	8.80
CORN PLANTER 6-38	60	11.47	1.58	49.02	6.76	58.51	8.07
CORN PLANTER 6-30	60	11.08	1.94	46.94	8.20	55.83	9.75
CORN PLANTER 8-30	75	13.92	1.82	56.91	7.45	68.15	8.92
POTATO PLANTER 4 ROW	120	21.03	5.49	79.93	20.87	95.75	25.00
BEEF PLANTER 12ROW	100	18.10	3.88	69.62	14.92	83.54	17.90
GRAIN DRILL PW 14 FT	40	9.53	1.71	37.04	6.64	44.27	7.94
GRAIN DRILL PW 16 FT	60	13.51	2.12	48.33	7.59	57.98	9.10
GRAIN DRILL PW 20 FT	75	16.32	2.05	56.23	7.06	67.34	8.46

TABLE 11, CONTINUED

ESTIMATED OPERATING COSTS, OWNERSHIP COSTS AND SUGGESTED CUSTOM RATES
ON A PER HOUR AND A PER ACRE BASIS

MACHINE	TRACTOR HP	CASH OPERATING COSTS		TOTAL COSTS		SUGGESTED CUSTOM RATES	
		PER HOUR	PER ACRE	PER HOUR	PER ACRE	PER HOUR	PER ACRE
GRAIN DRILL PW 24 FT	75	17.53	1.83	61.04	6.39	72.99	7.64
GRAIN DRILL PW 28 FT	100	21.47	1.93	70.60	6.33	84.36	7.57
CULTIVATOR 4-30	40	4.68	.95	16.94	3.45	20.25	4.12
CULTIVATOR 6-30	60	6.98	.95	22.40	3.04	26.86	3.64
CULTIVATOR 6-30	60	6.71	1.15	20.86	3.59	24.97	4.29
CULTIVATOR 8-30	75	8.50	1.10	25.38	3.27	30.42	3.92
ROTARY HOE 16	40	4.65	.43	24.08	2.22	28.73	2.65
POTATO CULT. 4 ROW	75	8.71	1.42	24.45	3.99	29.32	4.78
BEEF CULT. 12 ROW	100	11.67	1.95	39.53	6.59	47.44	7.91
BEEF THINNER 6 ROW	100	14.51	6.91	49.86	23.74	59.83	28.49
BEEF THINNER 12 ROW	120	20.66	4.92	75.89	18.07	91.07	21.68
SPRAYER 30FT	40	5.48	.39	22.57	1.59	27.05	1.91
SPRAYER 50FT	60	8.62	.36	28.53	1.21	34.22	1.45
SPRAYER HI PRES 50FT	60	14.35	.61	46.16	1.95	55.33	2.34
ANHYDROUS APPLICATOR	120	14.70	1.65	48.44	5.44	55.92	6.28
SHREDDER 12FT	60	6.86	1.57	23.90	5.48	28.61	6.56
SWATHER-COND. 12FT	---	8.19	1.50	46.44	8.51	55.40	10.16
SWATHER-COND. 15FT	---	8.21	1.20	46.81	6.86	55.84	8.19
SWATHER 12 FT	---	7.85	1.35	43.38	7.46	51.71	8.89
SWATHER 15 FT	---	7.86	1.08	43.74	6.01	51.98	7.15
SWATHER 18 FT	---	7.93	.91	44.56	5.11	53.38	6.12
SWATHER 20 FT	---	8.30	.86	48.54	5.01	58.02	5.98
1 TON STACKER	60	9.32	2.25	29.10	7.02	34.17	8.24
3 TON STACKER	75	12.91	2.67	36.81	7.61	43.08	8.91
6 TON STACKER	100	18.50	3.35	45.25	8.19	53.12	9.61
BALER PTO TWINE	40	5.94	1.57	22.86	6.04	25.93	6.86

TABLE 11, CONTINUED

ESTIMATED OPERATING COSTS, OWNERSHIP COSTS, AND SUGGESTED CUSTOM RATES
ON A PER HOUR AND A PER ACRE BASIS

MACHINE	TRACTOR HP	CASH OPERATING COSTS		TOTAL COSTS		SUGGESTED CUSTOM RATES	
		PER HOUR	PER ACRE	PER HOUR	PER ACRE	PER HOUR	PER ACRE
ROUND BALER	60	8.45	1.82	26.29	5.67	30.77	6.64
ROTARY MOWER	40	4.80	1.76	16.37	6.00	19.55	7.17
RAKE (HYD)	40	4.69	1.34	15.11	4.33	20.19	5.78
FORAGE HARV. 1 ROW	60	8.78	9.29	36.99	39.12	43.37	45.87
FORAGE HARV. 2 ROW	100	13.45	8.13	47.59	28.76	55.33	33.44
FOR HARV 2ROW SP	---	23.61	11.59	35.35	41.91	97.60	47.93
FOR HAR 3ROW SP	---	25.56	8.37	89.19	29.20	101.42	33.20
FORAGE BLOWER LG	60	6.39		23.24		21.15	
CORN PICKER 2-38	40	7.63	5.12	30.15	20.25	37.76	25.36
PICKER-SHELLER 2-ROW	60	10.05	6.75	35.46	23.81	44.34	29.77
COMBINE SM GRAIN SML	SML	21.97	5.36	52.22	12.75	61.68	15.05
COMBINE SM GRAIN MED	MED	28.95	6.12	68.76	14.54	81.48	17.24
COMBINE SM GRAIN LGE	LRG	33.55	5.32	78.43	12.44	93.69	14.86
COMBINE SOYBEANS SML	SML	22.36	6.24	53.66	14.97	63.05	17.59
COMBINE SOYBEANS MED	MED	29.42	7.11	70.50	17.04	83.19	20.11
COMBINE SOYBEANS LGE	LRG	34.32	6.91	81.28	16.37	96.19	19.38
COMBINE CORN 2-38 SM	SML	22.91	15.38	53.42	35.87	62.96	42.28
COMBINE CORN 3-38 SM	SML	24.22	10.78	56.85	25.32	67.66	30.13
COMBINE CORN 4-38 MD	MED	32.25	10.78	76.02	25.40	90.50	30.24
COMBINE CORN 4-30 MD	MED	32.04	12.32	75.43	29.01	89.76	34.52
COMBINE CORN 6-30 LG	LRG	38.06	9.76	88.64	22.73	105.39	27.02
COMBINE CORN 8-30 LG	LRG	39.93	8.45	93.58	19.80	111.02	23.49
POTATO HARVSTR. 2ROW	120	17.46	7.01	76.84	30.86	92.05	36.97
BEEF LIFTER 3 ROW	100	13.08	5.03	58.79	22.61	70.21	27.00
BEEF LIFTER 4 ROW	100	13.75	3.97	66.23	19.11	79.04	22.81
BEEF LIFTER 6 ROW	120	17.71	3.41	90.66	17.44	108.17	20.80
BEEF TOPPER 3 ROW	60	7.84	2.45	33.92	10.60	40.44	12.64
BEEF TOPPER 4 ROW	75	9.82	2.30	40.92	9.60	48.56	11.39
BEEF TOPPER 6 ROW	100	12.71	1.99	47.28	7.39	56.38	8.81
BEEF WAGON 8TON	75	7.98		32.30		38.60	
LIGHT TRUCK	---	10.44		19.56		25.10	
MEDIUM TRUCK	---	16.44		28.09		36.40	
HEAVY TRUCK	---	26.68		41.97		54.57	
WAGON	40	4.24		19.72		23.75	
FORAGE WAGON 14FT	40	4.58		20.10		25.72	
FORAGE WAGON 16FT	40	4.63		20.46		26.23	